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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/417,097	10/13/1999	MASAYUKI MASUYAMA	0819-298	6973
20277	7590	08/25/2004	EXAMINER	
MCDERMOTT WILL & EMERY LLP 600 13TH STREET, N.W. WASHINGTON, DC 20005-3096			NGUYEN, LUONG TRUNG	
			ART UNIT	PAPER NUMBER
			2612	

DATE MAILED: 08/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/417,097	MASUYAMA, MASAYUKI	
	Examiner	Art Unit	
	LUONG T NGUYEN	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
 4a) Of the above claim(s) 12-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 22-25 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 October 1999 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2, 4, 7</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Species I, corresponding to Figs. 3-10, read on claims 1-11, 22-25 in the reply filed on 6/17/04 is acknowledged.

2. Claims 12-21 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Species, there being no allowable generic or linking claim.

The Applicant is reminded that upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Priority

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for

Art Unit: 2612

patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-4, 6, 8-10 are rejected under 35 U.S.C. 102(e) as being anticipated by Kuroda et al. (US 6,512,543).

Regarding claim 1, Kuroda et al. discloses an amplifying solid-state imaging device comprising a plurality of pixels (pixels 32, figure 4, column 6, lines 11-25, column 4, lines 5-24) arranged in columns and rows, each said pixel including a signal storage section (photoelectric conversion/storage section 33, 6, lines 11-25, column 4, lines 5-24) for creating signal charge through photoelectric conversion and storing thereon signal information corresponding to the signal charge; reset signal supply means for generating a reset signal for an electronic shuttering operation and supplying the reset signal to the pixels belonging to one of the rows that has been selected to perform the electronic shuttering operation thereon, thereby resetting the signal storage sections included in the pixels on the selected row (reset transistors 80, figure 4, column 9, lines 15-65); row selecting means for sequentially selecting at least one row of pixels from the pixels to perform a signal readout operation thereon (shift register 36, selected-row-transistors 42, figure 4, column 9, lines 39-64); and a signal detector (driving transistors 35, load transistors 44, figure 4, column 9, lines 39-64) for reading out the signal information, which is stored in the signal storage sections included in the pixels on the row that has been selected by the row selecting means to perform the signal readout operation thereon, the signal detector including an amplifier (driving transistors 35, load transistors 44, figure 4, column 9, lines 39-64) that is connected in series between first and second power supplies (Vdd and Vss, figure 4), the signal detector sensing the signal information by making a current flow between the first and second

Art Unit: 2612

power supplies, amplifying the signal information and then outputting the amplified signal information, wherein a period during which the reset signal supply means is supplying the reset signal to an arbitrary one of the pixel rows overlaps with a period during which the row selecting means is selecting another one of the pixel rows to perform the readout operation thereon (in period 61, reset clock 81 to (n-1th) row overlaps with row selection 65 to nth row, figure 5, column 10, lines 24-32).

Regarding claims 2, 8, Kuroda et al. discloses the amplifier of the signal detector comprises drivers (driving transistors 35, figure 4) provided for the respective pixels; and load devices (load transistors 44, figure 4) provided for the respective pixel columns.

Regarding claims 3, 9, Kuroda et al. discloses each said driver (driving transistor 35, figure 4) is a transistor comprising a gate electrode (gate 34, figure 4) connected to associated one of the signal storage sections (photoelectric conversion/storage section 33, figure 4); a drain connected to the first power supply (Vdd, figure 4); and a source connected to associated one of the load devices (load transistor 44).

Regarding claims 4, 10, Kuroda et al. discloses each said driver and associated one of the load devices together form a source follower circuit (column 6, lines 57-62).

Regarding claim 6, all the limitations are contained in claim 1, therefore, see Examiner's comments regarding claim 1, except for the limitation "wherein the number of the pixel rows is

Art Unit: 2612

equal to an HD number, which is the number of horizontal sync signals included in one frame interval,” which is disclosed as number n rows of imaging area 31 (number of pixel rows), and sequentially reading out nth row and (n+1)th row of imaging area 31 (the number of horizontal sync signals included in one frame interval, Kuroda et al., figure 4, column 9, lines 15-64, column 10, lines 15-32).

6. Claims 22-25 are rejected under 102 (e) as being anticipated by Wang et al. (US 4,862,276).

Regarding claims 22, 23, Wang et al. discloses 22 an amplifying solid-state imaging device comprising a number m of pixel rows (array of pixels R1-Rm, Rd, figure 7), where m is equal to or larger than two, wherein the device further includes at least one dummy pixel row (dummy pixel row Rd, figure 7, column 12, lines 27-30), and wherein while a reset signal for an electronic shuttering operation is being supplied to an ith row that has been selected from the number m of pixel rows, a readout operation is selectively performed on either an nth row that has also been selected from the number m of pixel rows or the dummy pixel row, where $1 \leq i \leq m$, $1 \leq n \leq m$ and $n \neq i$ (figures 7-8, column 12, line 13 – column 13, line 38).

Regarding claim 24, Wang et al. discloses sequentially selecting the number m of pixel rows provided within the effective pixel area to perform the readout operation thereon; and supplying the reset signal for the electronic shuttering operation to each said pixel row that has been selected from the number m of pixel rows provided within the effective pixel area to perform the readout operation thereon after a predetermined time has passed since the readout operation was performed (figures 7-8, column 12, line 13 – column 13, line 38).

Regarding claim 25, Wang et al. discloses the dummy pixel row is selected to perform the readout operation thereon between a point in time the last mth row within the effective pixel area is selected and a point in time the reset signal for the electronic shuttering operation is supplied to the last mth row within the effective pixel area (figures 7-8, column 12, line 13 – column 13, line 38).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 5, 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroda et al. (US 6,512,543) in view of Beiley et al. (US 6,522,357).

Regarding claims 5, 11, Kuroda et al. discloses each said signal storage section comprises a photodiode for performing photoelectric conversion (photoelectric conversion/storage section 33, 6, lines 11-25, column 4, lines 5-24).

Kuroda et al. fails to specifically disclose a capacitor for storing thereon charge created by the photodiode; and a transistor for electrically connecting or disconnecting the photodiode to/from the capacitor. However, Beiley et al. teaches a CMOS image sensor, which comprises a plurality of pixels, each pixel comprises a capacitor 34 and a transistor (M2) 24, which connecting or disconnecting the photodiode 14 to/from the capacitor 34, figure 1, column 3, lines

Art Unit: 2612

19-35). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Kuroda et al. by the teaching of Beiley et al. in order to store charge before read out. Doing so, the image quality of the readout image is increased.

9. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroda et al. (US 6,512,543) in view of Wang et al. (US 4,862,276).

Regarding claim 7, Kuroda et al. fails to specifically disclose the pixels are classified into a group of imaging pixels that are provided within an effective pixel area and a group of dummy pixels that are provided in an area other than the effective pixel area, and wherein the number of pixel rows formed by the group of dummy pixels is obtained by subtracting the number of pixel rows formed by the group of imaging pixels from the number of the horizontal sync signals included in one frame interval. However, Wang et al. teaches a push-pull readout array, which comprises an effective area (rows of pixels R1-Rm, figure 7) and a group of dummy pixels (dummy pixels Rd, figure 7, column 12, lines 13-30), and number of pixel rows formed by the group of dummy pixels is obtained by subtracting the number of pixel rows formed by the group of imaging pixels from the number of the horizontal sync signals included in one frame interval (figure 7). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Kuroda et al. by the teaching of Wang et al. in order to obtain an array in which the undesired pedestal in the array output waveform is eliminated (column 4, lines 53-55).

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hamasaki (US 5,410,348) discloses amplifier type image sensor with shutter operation.

Chen et al. (US 6,215,113) discloses CMOS active pixel sensor.

Gowda et al. (US 6,344,877) discloses image sensor with dummy pixel or dummy pixel array.

Kuroda et al. (US 6,469,740) discloses physical quantity distribution sensor and method for driving the same.


11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LUONG T NGUYEN whose telephone number is (703) 308-9297. The examiner can normally be reached on 7:30AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on (703) 305-4929. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2612

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LN *LW*
8/22/04


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PRIMARY EXAMINER